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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/935,018	08/22/2001	Edward Steketee	10010838-1	9187

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AGILENT TECHNOLOGIES, INC.
Legal Department, DL429
Intellectual Property Administration
P.O. Box 7599
Loveland, CO 80537-0599

EXAMINER

SOHN, SEUNG C

ART UNIT	PAPER NUMBER
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2878

DATE MAILED: 03/11/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/935,018	STEKETEE ET AL.	
	Examiner	Art Unit	
	Seung C. Sohn	2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 December 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-17 and 27-43 is/are rejected.
- 7) ☒ Claim(s) 3,18-26 and 44 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on December 11, 2003 has been entered.

Election/Restrictions

2. Since all claims are readable under Fig. 8, the restriction requirement made on March 27, 2003 is hereby withdrawn. Claims 3, 18-26 and 44, previously withdrawn from consideration as a result of a restriction requirement, now subject to being rejoined. Claims 3, 18-26 and 44 are hereby rejoined and fully examined for patentability.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. ***Claim 40 is rejected under 35 U.S.C. 112, second paragraph***, as being indefinite for failing to particularly point out and distinctly claim the subject matter which

applicant regards as the invention. Claim 40 recites the limitation "the retainer" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. ***Claims 1-2, 4-7 and 27-43 are rejected under 35 U.S.C. 102(e) as being anticipated by Okumura et al (Patent No. US 6,624,433).***

Referring to claims 1-2 and 4-7, Okumura et al shows in Fig. 8 the following elements of Applicant's claim:

a) a first optical fiber, with a receiving end and a transmitting end, adapted to receive laser light at the receiving end and create a light beam at the transmitting end (Col. 24, lines 33-43);

b) a second optical fiber, with a receiving end and a transmitting end, positioned such that the receiving end of the second optical fiber receives the light beam and transmits light to the transmitting end of the second optical fiber (Col. 24, lines 24-32); and

c) a single optical power detector (24a) optically coupled to the transmitting end of the second optical fiber, the optical power detector having an

output P indicative of the optical power of the light transmitted through the second optical fiber, the output P having a maximum value P_{max} when no object is within the light beam and a minimum value P_{min} when the object is fully within the light beam;

wherein the edge of the object (wafer) is detected when the object partially obstructs the light beam, such that the output P of the single optical power detector is less than the maximum value P_{max} and greater than the minimum value P_{min} (Col. 19, lines 58-63).

Referring to claims 27-33, Okumura et al shows in Fig. 8 the following elements of Applicant's claim:

a) an edge detector, said edge detector comprising:

aa) a first optical fiber, with a receiving end and a transmitting end, adapted to receive laser light at the receiving end and create a light beam at the transmitting end (Col. 24, lines 33-44);

ab) a second optical fiber, with a receiving end and a transmitting end, positioned such that the receiving end of the second optical fiber receives the light beam and transmits light to the transmitting end of the second optical fiber (Col. 24, lines 24-32); and

ac) an optical power detector (24a, 24b or 24c) optically coupled to the transmitting end of the second optical fiber, the optical power detector having an output indicative of the optical power of the light transmitted through the second optical fiber, the output P having a maximum value

P_{max} when no object is within the light beam and minimum value P_{min} when the object is fully within the light beam;

b) an object positioning stage (2', i.e., wafer holder) for adjusting the position of the object (wafer) in a first direction (Col. 18, lines 37-43); and

c) a detector positioning stage for adjusting the position the edge detector in a second direction (Col. 18, lines 37-43);

wherein the edge of the object is detected when the object at least partially obstructs the light beam, causing a change in the output of the optical power detector (Col. 19, lines 58-63).

Referring to claim 34, Okumura et al. discloses the following steps of

Applicant's claim:

a) generating a light beam by passing light from a laser light source (Fig. 8, 25a, 25b or 25c) through a first optical fiber (Col. 24, lines 33-44);

b) receiving the light beam from the first optical fiber through a second optical fiber (Col. 24, lines 24-32);

c) detecting the optical power of the received light (Col. 18, lines 50-61);
and

d) positioning the edge of the object within the light beam such that the optical power of the received light is greater than a lower threshold and less than an upper threshold (Col. 18, lines 37-43).

Referring to claim 35, Okumura et al discloses that at least one of the lower and upper thresholds is proportional to a maximum power which is the optical power at the detector when no part of the object obstructs the light beam (Col. 19, lines 63-67).

Referring to claims 36-37, it is inherent that the maximum power is predetermined by a calibration for the purpose of preventing loss.

Referring to claims 38-43, Okumura et al discloses that the positioning is performed by a positioning stage (2', i.e., wafer holder) (Col. 18, lines 37-43).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. *Claims 8-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okumura et al. (Patent No. US 6,624,433) in view of Nguyen (Patent No. US 5,389,789) or Rye (Patent No. US 5,389,795).*

Referring to claims 8-17, Okumura et al. shows in Fig. 8 the following elements of Applicant's claim:

- a) a laser light source (25a, 25b or 25c);
- b) a first optical fiber, with a receiving end and a transmitting end, optically coupled to the laser light source at the receiving end and creating a light beam at the transmitting end (Col. 24, lines 33-44);

c) an optical power detector (24a, 24b or 24c), providing an optical power signal as output;

d) a second optical fiber, with a receiving end and a transmitting end, optically coupled to the optical power detector at the transmitting end (Col. 24, lines 24-32);

e) a positioning stage (2', i.e., wafer holder) for adjusting the relative positions of the object (wafer) and the light beam (Col. 18, lines 37-43); and

f) a controller (MCS) operably coupled to the positioning stage (2') and responsive to the optical power signal, the controller being configured to cause the positioning stage to position the object at a predetermined position relative to the light beam (Col. 18, lines 37-43),

wherein the position of the object relative to the light beam is adjusted so that the optical power signal is greater than a lower threshold and less than an upper threshold (Col. 19, lines 58-63) and at least one of the lower and upper thresholds is proportional to a maximum power which is the optical power at the detector when no part of the object obstructs the light beam (Col. 19, lines 63-67).

Okumura et al. discloses the claimed invention as set forth above, but does not specifically disclose a retainer for holding said first and second optical fibers such that the receiving end of the second optical fiber receives the light beam. Nguyen (or Rye) discloses a retainer (30, 32 transmitter and receiver fiber optic cables holders) for holding said first and second optical fibers such that the receiving end of the second

optical fiber receives the light beam. It would have been obvious to a person having ordinary skill in the art to provide a fiber retainer of Nguyen (or Rye) in the device of Okumura et al. since the use of a fiber retainer is a common structural provision taken by those skilled in the art for the purpose of holding optical fibers to prevent light fluctuation. Also, it is inherent that the maximum power is determined by calculation from an optical power transmitted from the transmitting end of said first optical fiber, the geometric properties of the receiving end of the second optical fiber and the relative positions of the first and second optical fibers since the maximum power of light detection is achieved by reducing transmission loss from the light source to the detector.

Allowable Subject Matter

9. **Claims 3, 18-26 and 44** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter:

Claims 3, 18-26 and 44 are allowable because the prior art fails to disclose or make obvious, either singly or in combination, an edge detector for detecting an edge of an object comprising, in addition to the other recited features of the claim, "an optical coupler having at least three ports, the optical coupler being adapted to receive laser light at a first port of the at least three ports, coupled to the receiving end of the first

optical fiber at a second port of the at least three ports and coupled to the receiving end of the second optical fiber at a third port of the at least three ports; a mirror separated from the transmitting end of the first optical fiber by a gap and positioned to receive the laser light beam and reflect it back to the transmitting end of the optical fiber”.

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Seung C. Sohn whose telephone number is (571) 272-2446. The examiner can normally be reached on Monday through Friday from 8:30 am to 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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THANH X. LOU
PATENT EXAMINER